

FIG. 1

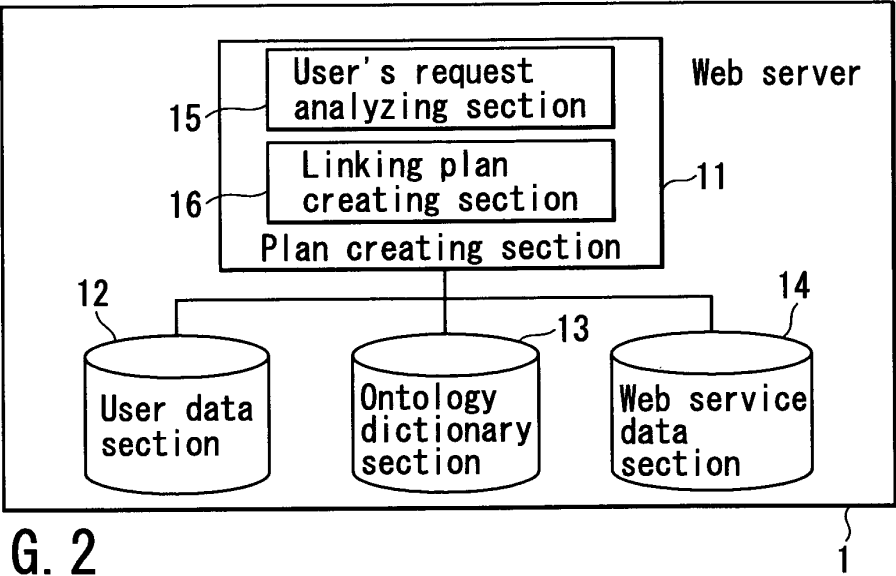


FIG. 2

Identifier	User identifier	Predicate	Whether-to-use data	
D1	Tanaka	LocatedAt (Tanaka, Tokyo)	Yes	←25
D2	Tanaka	HaveMileageAccount (Tanaka, A company)	No	←26
..	
..	

FIG. 3

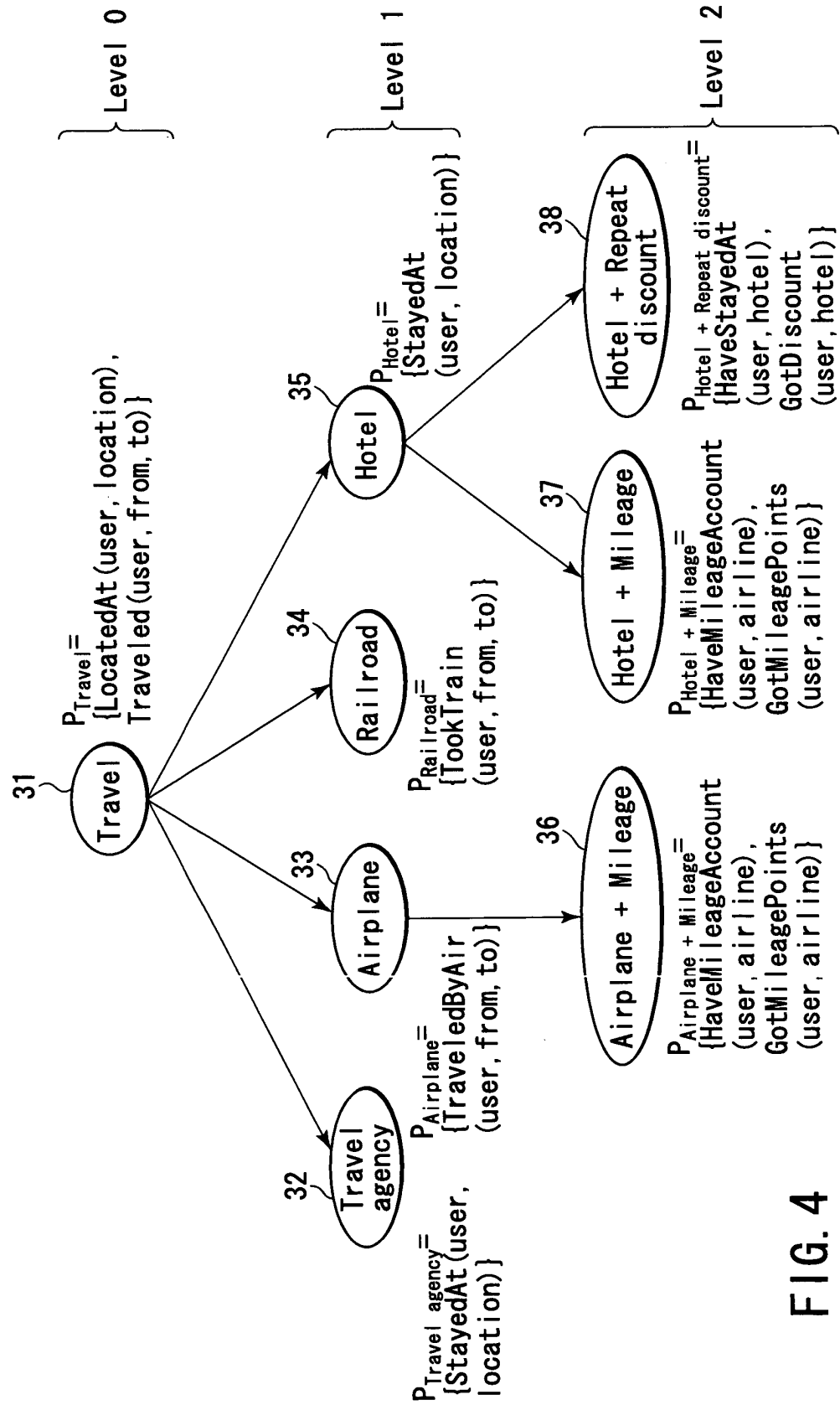


FIG. 4

Service ID: S1 Predicate: TravelAgencyService(user, from, to) Content of service: Travel agency Precondition: LocatedAt(user, from) Post condition: Traveled(user, from, to) \wedge StayedAt(user, to) \wedge LocatedAt(user, to)	41
Service ID: S2 Predicate: AirlineService(user, from, to) Content of service: Airplane Precondition: LocatedAt(user, from) Post condition: Traveled(user, from, to) \wedge LocatedAt(user, to)	42
Service ID: S3 Predicate: AirlineService(user, from, to) Content of service: Airplane + Mileage totalization Precondition: LocatedAt(user, from) \wedge HaveMileageAccount (user, airline) Post condition: Traveled(user, from, to) \wedge LocatedAt(user, to) \wedge HaveMileageAccount(user, airline) \wedge GotMileagePoints (user, airline)	43
Service ID: S4 Predicate: RailroadService(user, from, to) Content of service: Railroad Precondition: LocatedAt(user, from) Post condition: Traveled(user, from, to) \wedge LocatedAt(user, to)	44
Service ID: S5 Predicate: HotelService(user, location) Content of service: Hotel Precondition: LocatedAt(user, location) Post condition: Stayed(user, location) \wedge LocatedAt(user, location)	45
Service ID: S6 Predicate: HotelService(user, location) Content of service: Hotel + Mileage totalization Precondition: LocatedAt(user, location) \wedge HaveMileage Account(user, airline) Post condition: StayedAt(user, location) \wedge LocatedAt(user, location) \wedge HaveMileageAccount(user, airline) \wedge GotMileage Points(user, airline)	46
Service ID: S7 Predicate: HotelService(user, location) Content of service: Hotel + Repeat discount Precondition: LocatedAt(user, location) \wedge HaveStayedAt (user, hotel) Post condition: StayedAt(user, location) \wedge LocatedAt(user, location) \wedge HaveStayedAt(user, hotel) \wedge GotDiscount(user, hotel)	47

FIG. 5

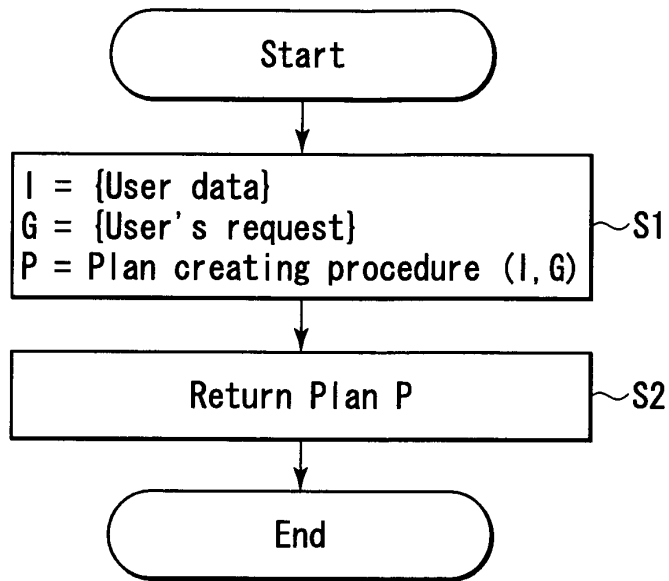


FIG. 6

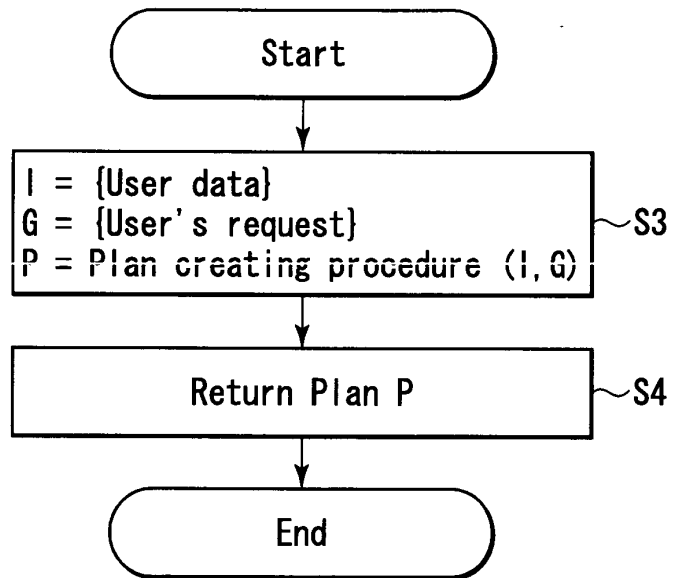
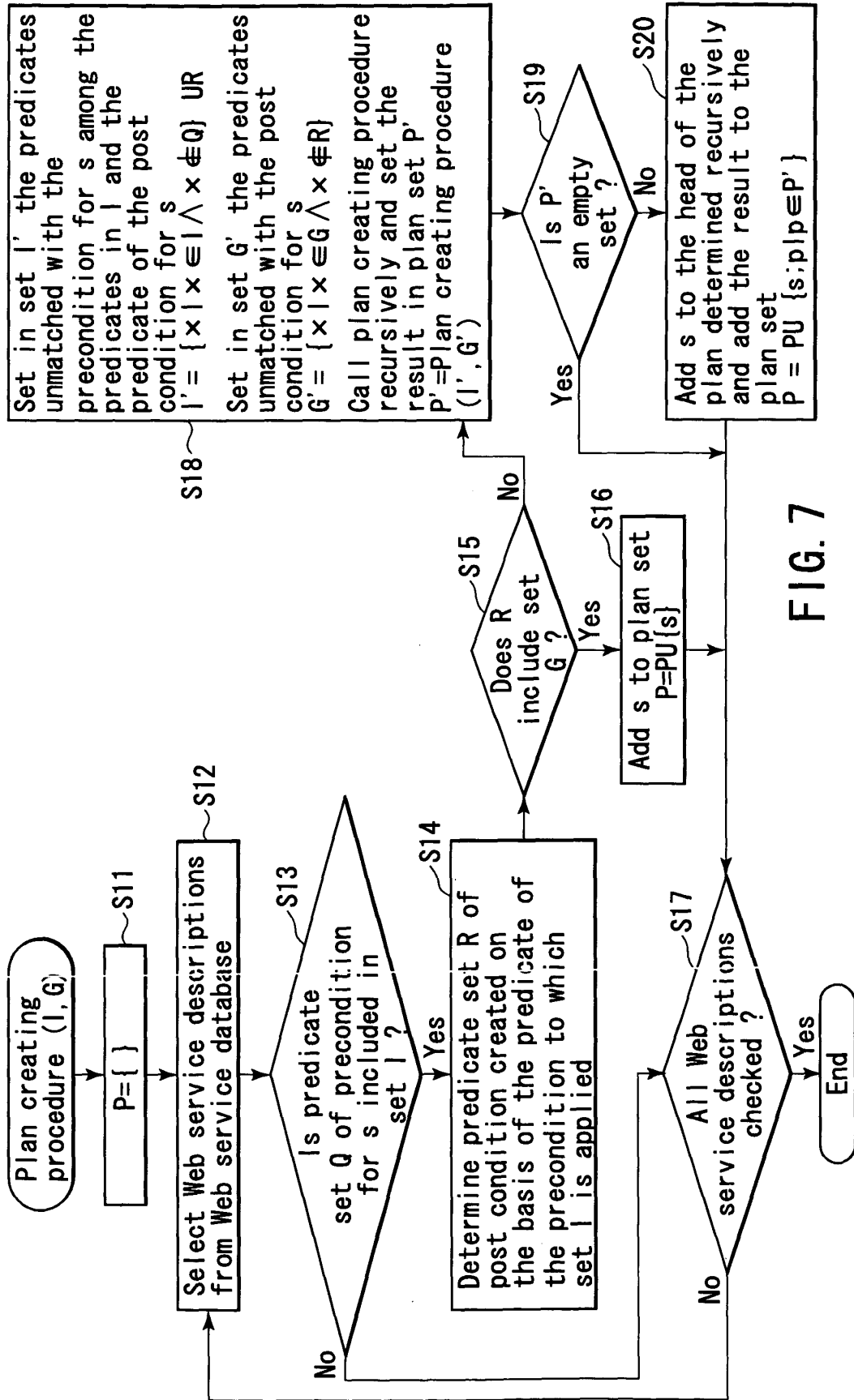


FIG. 8



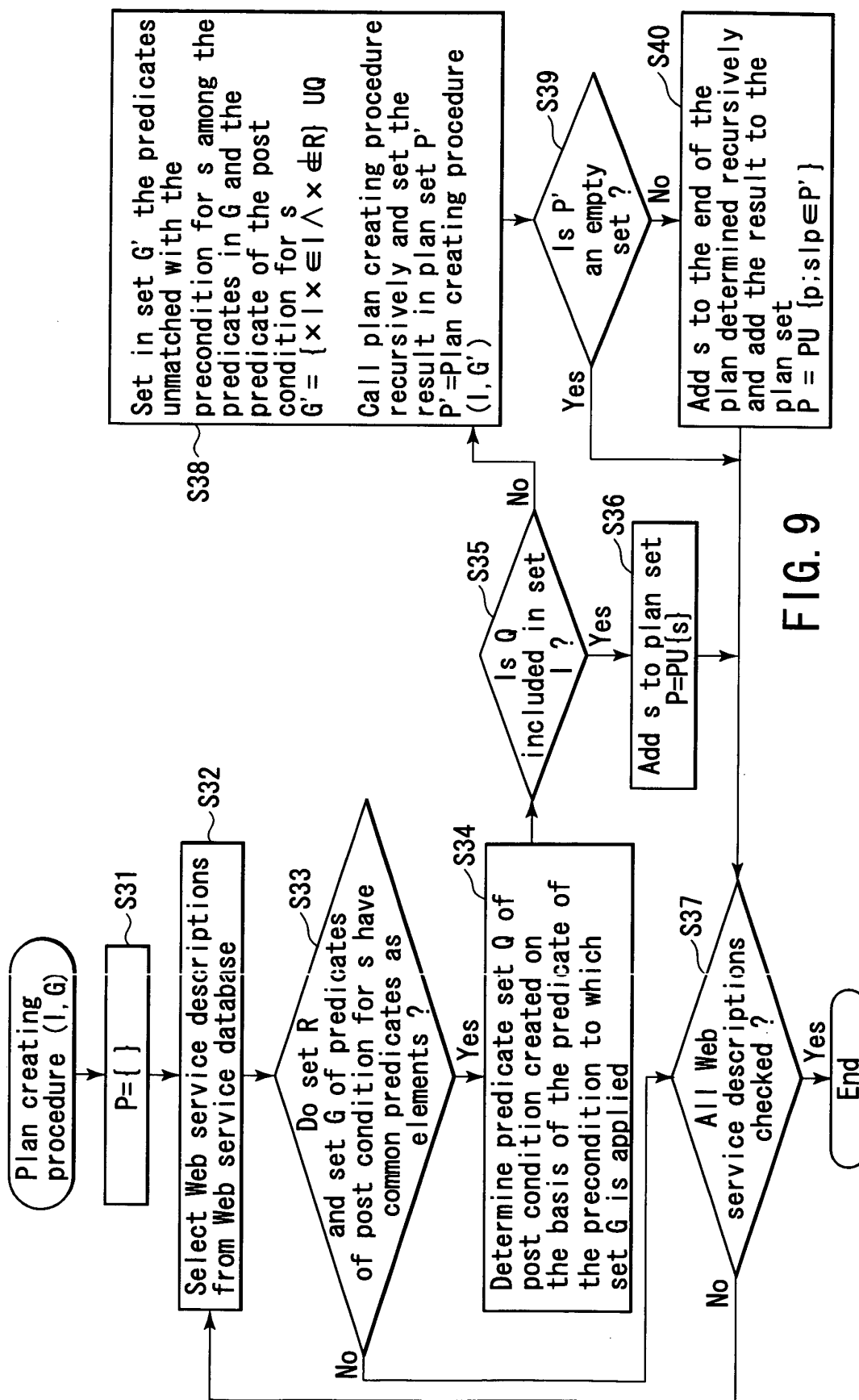


FIG. 9